

CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society
Of America

Vol. VIII

SEPTEMBER, 1936

No. 3



Mesembryanthemum roseum in full bloom.
The Highland Rockeries, South Africa.
(See page 36)



CACTUS AND SUCCULENT JOURNAL

Published and Owned by The Cactus and Succulent Society of America, Inc., 6162 N. Figueroa St., Los Angeles, California (Mail Address Only). A monthly magazine to promote the Society and devoted to Cacti and Succulents for the dissemination of knowledge and the recording of hitherto unpublished data in order that the culture and study of these particular plants may attain the popularity which is justly theirs. (Membership and subscription \$3.00 per year. Foreign \$3.00 per year by International money order.) Mail application to SCOTT HASELTON, *Editor*, 6162 N. Figueroa St., Los Angeles, Calif. *Editorial Staff*: EDGAR M. BAXTER, C. L. CLUM, G. A. FRICK, DR. A. D. HOUGHTON, WM. T. MARSHALL, ERIC WALTHER, and JAMES WEST.

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Huntington Botanical Gardens

Fifteen acres of *Xerophytes*, many of which have been growing for thirty years, has attracted world-wide attention to the Huntington Botanical Gardens at San Marino, California. A year ago Mr. William Hertrich estimated the collection of plants to exceed fifteen hundred species most of which had been acclimated to a locality in which the seasons are reversed from that of their native habitat. Mr. Hertrich states that his greatest problem has been to overcome this seasonal difference, and it has not been easy to keep a plant dormant during our growing season and to keep it growing during our winters with rains followed by low temperatures. A gradual adaptation to California climate has resulted in some of the largest tree-size cacti in America.

That Mr. Hertrich has ably developed this garden is endorsed by the Henry E. Huntington Library and Art Gallery Foundation which has presented the following bulletin:

Important Acquisitions for Cactus Collection in Huntington Botanical Gardens

San Marino, August 10—Returning today from an extensive tour of European botanical centers, William Hertrich, Curator of the Huntington Botanical Gardens, announced arrangements for acquisitions which will make the Huntington cactus and succulent garden the greatest collection of xerophytes, or desert plants, in the world. The new purchases and

gifts will add plants from important collections in the United States and Europe.

The Huntington garden specializes in large specimen plants and many unusually fine ones have come with the new additions. Among the new material, which is arriving almost daily, is a comprehensive collection of South American cactus—the most difficult to obtain of all desert plants.

By next spring the newly acquired specimens will be transplanted to the cactus garden proper, where visitors may then see approximately 2,500 varieties and species of xerophytes, growing under conditions similar to their native habitat—whether North or South America, South Africa, Madagascar, or the Canary Islands.

While in London, Mr. Hertrich lectured on the subject, "Rock Garden Plants as Grown in Southern California," before the Alpine Conference, held under the auspices of the Royal Horticultural Society. He visited the experimental gardens of the Society at Wisley, as well as the Royal Botanical Gardens at Kew, and private estates with large collections of plants. On the Continent he visited several important botanical collections, including that of the University of Berlin, at Dahlem, and the Munich Botanic Garden. He also saw the largest collection of Mesembryanthemums from South Africa, at the botanic garden of the University of Kiel, Germany.

NEXT MEETING OF THE CACTUS SOCIETY

SUNDAY, SEPTEMBER 27th. A meeting that will be different. 3:00 p. m. Meet at 327 North Avenue 61, Los Angeles, to inspect the magnificent collection of our Executive Board Member, William Taylor Marshall. At 5:00 p. m., picnic supper in the garden of Past President Charles G. Adams, 440 Arroyo Drive (not Arroyo Blvd.), South Pasadena. Coffee will be furnished by our host. Then a special event followed by an illustrated talk on his recent European trip by our Vice-President, William Hertrich, Curator, Huntington Botanic Gardens.

The Annual Meeting of the Society will be held before October 15th, at which the report of the Nominating Committee will report and further nominations may be made. Watch for post card announcement.



Echinocereus Ledingii sp. nov.

A New Echinocereus From Arizona

By R. H. PEEBLES U. S. Department of Agriculture, Sacaton, Arizona

Planta caespitosa, caulibus subcylindricis, 40 cm. longis, costis 16, areolis ellipticis, aculeis stramineis, translucentibus, teretibus, radialibus 10-12, rectis, centrali infimi solitario 2-3 cm. longo, decurvo; petala roseo-purpurea, oblanceolato-spathulata, breviter cuspidata, margine superiore erosa; ovarium 2.5-3.0 cm. longum, areolis spinosis ca. 50 instructum.

Echinocereus Ledingii sp. nov.

Type collected at about 4,500 feet elevation on slopes of Mt. Graham, Pinaleno Mts., Graham Co., Arizona, Louis Wankum, July 11, 1935, U. S. Nat. Herb. No. 1,634,004. Other collections, same locality, Peebles SF 831 (1934) and Peebles SF 982 (1936).

The species is abundant along Swift Trail, Mt. Graham, from 4,500 to 6,000 feet elevation, associated with *Quercus Emoryi* Torr., *Juniperus pachyphloea* Torr., *Arctostaphylos pungens* HBK. and *Nolina microcarpa* Wats. The plants have as many as 12 stems, attain a height of 50 cm. and a diameter at base of 8 cm. The stems have 13 to 16 ribs and are always yellowish-green. As many as 3 upper central spines occur on some individuals and these are straight, porrect or elevated, shorter than the single lower central. Petals are light or dark rose-purple, 3.5 to 4.0 cm. long, often smaller on young plants.

In the plant's natural environment flowering apparently begins about May 10.

Peebles SF 982, a topotype, matured two fruits in cultivation. Fruit pale green, globose, 17-23 mm. in diameter. Seeds dull black, compressed, oblique, 1.4 mm. long, finely tuberculate-pitted and striate by confluence of tubercles; hilum large, oblong.

E. Ledingii is named for Mr. A. R. Leding, State College, N. M., an enthusiastic student of Cactaceae of the southwestern United States. It occurs at elevations well above those at which *E. Engelmannii* (Parry) Rümpler is found in Graham County, and is readily distinguished from that species by the solitary, characteristically curved lower central spine and the translucent, terete character of all of the spines, and it is not to be confused with *E. Engelmannii* var. *chrysocentrus* Engelm. & Bigel., a form distinguished only by the color of the spines.

Some of the Little Treasures of Our Veldt

By J. HURLING

The Highlands Rockeries, Cape Province, South Africa.

In our area of the South Western Cape, South Africa, known as the "Little Karroo" with an average rainfall of only nine inches per annum, it is astounding to find the countryside a blaze of colour during the winter months.

It is well known in these parts that succulent plants can resist almost any drought, providing the plants get their fair share of dew and rain during the winter months; it is then that the plants fill their bodies with water, expand their sides, and burst into flower, transforming the countryside into a vertiable carpet of colour.

Succulent plants have a wonderful way of disguising themselves, and nature has bestowed the great gift of adaptability on them to such a degree that often you may stand surrounded by plants, and yet you will not readily see them; and only on very close examination will you see plants growing among round pebbles of the same size, and colour as themselves.

Crassula columnaris is an excellent example of protective mimicry, the plants thus escaping the attention of herbivorous animals. This plant, before it produces its round head of cream coloured sweet smelling flowers, often resembles a large button, with markings across the surface of the closely packed leaves in multicolours, similar to Scotch plaid. *Crassula columnaris* is a very hardy, easily grown plant. The little rounded bodies take from five to ten years, or even more, to reach maturity, differing in size from a small walnut to that of a hen's egg. When they are full-grown, a favorable season (winter), with sufficient rain, will cause the round body to open at the apex, and a dense head of cream coloured, sweet scented flowers appears; these are of an unusual vitality, for they will remain fresh for a month or even longer. When the seed has ripened the plant dies, being monocarpic. In close proximity to this plant, another little gem of the veldt is usually found in winter, *Bulbine Mesembrianthemoides*. This is one of the few plants with window leaves. The adult leaves are egg-shaped and subterranean except for the slightly convex apex; during the swelling of the leaves the conical, or even sharp pointed apex, disappears, and a circular spot, up to half inch in diameter, shows the colourless water-storing tissue of the centre of the leaf. Through this "window" the light enters the leaf and illuminates the lateral green layer from within.

This plant is tuberous and, after producing a raceme of small star-shaped yellow flowers in spring, the leaves gradually disappear underground with the ripening of the seeds, and the plant remains dormant throughout the summer.

Another interesting plant found in the crevices of rocks in this area, sometimes in shady corners and very often exposed to the full rays of the sun, is the *Conophytum*—"Cone-plant." This plant is often referred to as "dumplings" owing to the small closely packed sphaeroid bodies. Here, undeniably, the leaves play the most important role, each branch consisting of a pair of closely welded leaves, having but a small orifice at the top through which the flower emerges. During the summer months, when this plant is resting over one growing season to the next, we find the future growth protected marvelously well by the remains of those same leaves whose important part, for the welfare of the plant, was played during the preceding growing period. This protection is commonly called its "Summer coat," protecting the future growth from the burning rays of the summer sun.

In other forms of plants common to this area, we have the beautiful *Gasteria*, which is a semi-shade loving plant, ornamental, stately and most suitable for rockery work. This plant flowers twice a year, and the flowers are arranged on a branched raceme and pendulous, the perianth tube being much inflated in its lower portion; pink with a green limb. In some varieties the massive rosette of shiny smooth leaves remains close to the ground, in others the leaves are distichous. The leaves of this plant carry white spots which are caused by the absence of chlorophyll in certain groups of cells, and act as "windows" for enabling the light to penetrate into the interior of the leaf, and to illuminate the green tissue of the underside from within. *Gasteria* plants are usually found growing under huge bushes where they are protected from the burning sun and wild animals who relish their succulent leaves.

There are a few varieties of *Stapeliads* in this area, and one often comes across *Stapelia gemmiflora*, *S. hirsuta*, *S. rufa* and *S. variegata*. *Stapelia gemmiflora* is quite unique in itself and one often sees a plant covered all over with large black star-shaped flowers. The lobes of these flowers are fringed with beautiful pale purple

silky hairs which wave in the slightest breeze and make their flower most attractive. *Stapelia hirsuta* produces larger star-shaped flowers than *gemmiflora* and in this variety we find the flowers covered with bright purple hairs whereas, in *S. variegata*, the star-shaped flowers are quite smooth, with dark brown spots on a yellow background, resembling snake-skin. *S. rufa* has clusters of small red star-shaped flowers produced at the base of strong thick round stems up to nine inches in height. The seed pods of the Stapeliads are very remarkable in their shape, usually resembling a pair of buck-horns, dark green, and often highly mottled. These dual seed pods are often eight inches in length. This fruit, which curiously, only splits on one side, is known as a "follicle." The Stapeliad family provides its seeds with a long tuft of pure white silky hairs. The seeds are packed away in the ovary with a marvelous economy of space. When ready for their journey the ripe pods split open, the tufts of hairs push out the seeds, and they go sailing, sometimes miles away.

In our area we have several varieties of *Haworthia*. This family is mostly shade loving and have a tricky way of concealing themselves under short shrubby bushes, out of harms way. They are by no means easy to find, except to the trained eye; some of them look like small birds' nests, others look like small cobwebs, and quite a few have a transparent surface to the upper part of their leaves, which make them quite outstanding. One species, known as *Haworthia margaritifera*, is studded all over with pure white pearl-like excrescences on the outside as well as inside of its sharp pointed leaves, giving this plant an exceptionally unique appearance. This plant has been most appropriately named.

Among the Aloes we have that beautiful variety known as *Aloe striata*, and is commonly known as the "Coral Aloe," the flower resembling pieces of pink coral. This variety is classified under the acaulescent type—stemless. Its very pale grey-green glaucous leaves are faintly lined, spineless, and broad in proportion to their length. The inflorescence is much branched, and usually three or more from the same rosette of leaves.

From a gardening point of view, and for the decoration of rockeries, etc., the growing of Aloes has unlimited advantages. The Aloe being perennial, once established, will continue growing for years on end, and will persist throughout our driest seasons; then again, we have such a large variety of Aloes to select from, and from this large selection we get the following forms, viz., miniature, climbing, semi-climb-

ing, arborescent, stemmed, stemless, bushy, deciduous, tree, etc.

With these beautiful and fascinating varieties to select from, any gardener, however small his plot, can turn his garden into a little Paradise.

EDITORIAL

Your Editor is proceeding with the reprint of all four volumes of Britton and Rose, and a letter containing prices will be sent to all those who returned the questionnaire which was inserted in the July JOURNAL. A special discount will be allowed JOURNAL subscribers if ordered prior to the publication date of January 1.

One year ahead of schedule, this reprint of Britton and Rose fulfills the Editor's ten year plan, and other plans have already been formulated for the next ten years:

(1) Besides an educational supplement beginning with the January issue, will be a Cumulative Index of all references appearing in the JOURNALS over the entire ten years. Are your JOURNALS complete? If not, you should complete your files while they are still available.

(2) Also starting January 1 the Editorial Office will move to Pasadena, California, which will be the permanent home of the CACTUS JOURNAL and will be situated in a three-acre succulent garden now being constructed.

(3) A complete review of cactus nomenclature will be the next undertaking as soon as an investigation of all material has been completed. A printing of this revised work will follow the Britton and Rose reprint.

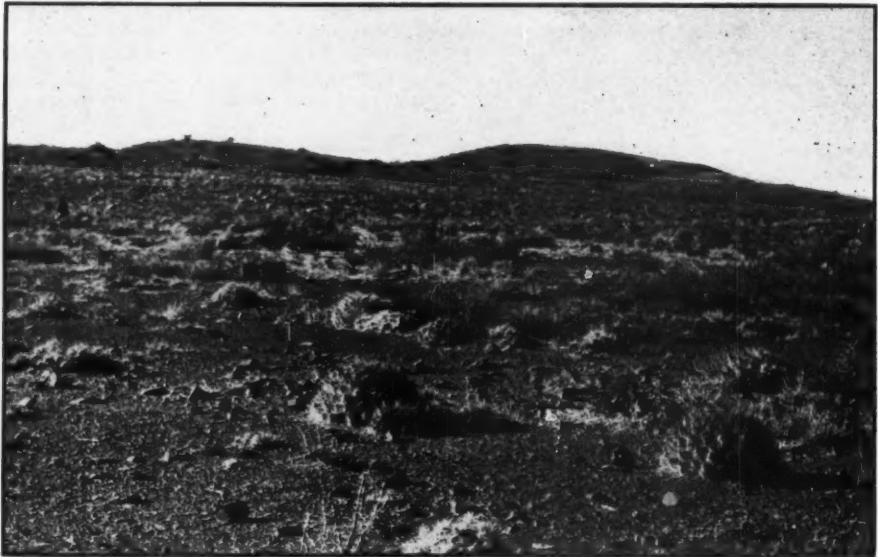
(4) And last but not least, your Editor plans a four volume edition on "The Other Succulents" similar to "The Cactaceae" with many color plates. A connection will be made with some botanical garden in this country or Europe where all material may be studied and recorded. This work will mean field trips to Africa and other lands rich in succulent material. As the reprinting of Britton and Rose seemed an impossible plan at its start, so this work on succulents may seem like a gigantic undertaking, but with the increasing interest in this group of plants, this, too, may be accomplished.

The Editor is financing each of these ventures with no appeal to any Society member. Your contribution is the maintaining of your interest in the JOURNAL and interesting others in our work.

SCOTT E. HASELTON.

"THE CACTACEAE" FOR SALE

Original Vol. III of Britton and Rose for sale, \$25.00. Inquire Cactus Society, 6162 No. Figueroa St., Los Angeles. Original set of Britton and Rose, \$250.00.



Echinocereus stramineus covers the desert hills in good season and in poor.

From Prickly Giants to Downy Midgets

By E. R. BOGUSCH

Shortly before the final copy of THE CACTACEAE by Britton and Rose went to press, Dr. J. N. Rose made one more visit into the cactus empire of the southwest. At a Sigma Xi dinner held in Texas at that time, he impressed upon those of us who were botanically inclined the potentiality of the floral resources of this region.

Although he did not realize it, Dr. Rose stimulated through that visit a certain lasting and definite interest among the younger men present. To us he meant the culmination of all knowledge of cacti. In one of those informal conferences he always graciously gave to men younger and less experienced than himself, he suggested the need for young botanists to specialize more in noteworthy groups of plants. That none of us undertook to build our own careers upon the CACTACEAE was in deference to the recognition of Dr. Rose's own thoroughness in the group.

However, he did build within us a regard for cacti that raised them in our own minds from grotesque bits of vegetable matter with certain botanical alliances to plants with personalities. When, shortly after Dr. Rose's death, it was my privilege to examine his extensive cactaceous collection at the Smithsonian Institution, to actually handle some of the specimens figured and de-

scribed in his monograph, and to read his terse—often cryptic—notes in his own handwriting, my mind reverted to that first meeting with him in Texas. Thus a love was born for the spiny population of the desert regions, which led to my writing the key to *Opuntias* in Ellen Schultz's TEXAS CACTI while busily engaged in other research.

From the viewpoint of the plant ecologist, Texas is divisible into several floral provinces, only one of which appeals to the cactus student and collector. While cacti range somewhat beyond this area into adjacent provinces within the state, it is the semi-arid south-western part of the state, west of San Antonio and south of Big Spring to the Rio Grande, into which the members of the cactus club at San Antonio make their many pilgrimages.

The real initiates in this game of cactus hunting can always find a good reason why they must once more go west across the chasm of the Pecos River to search for elusive forms from Marathon to Terlingua. Nor are they to be blamed, for the sky-rimmed landscape has an appeal distinctly its own, in the form of cacti, camps, and memories.

My first adventure into Trans-Pecos, Texas,

was during the time when motor vehicles were still proving themselves as units of transportation and roads were twin ruts across desert bolsons. We went as a survey party into the big bend region of the Rio Grande, south of Alpine, carried our own water and gasoline in drums, and constructed roads as we needed them.

No precipitation had occurred for many months prior to our coming, but—according to the natives—our presence changed all that. A cloudburst sent Peña Colorado Creek out of its banks, and our crew sought the higher levels, where rain-sodden tents were spread again. We had ample time to mull over the vicissitudes of weather and nature in general. Our members had collected random specimens of cactus, placed them loosely in cloth bags, and saved them from the flood.

The three of us who professed to be botanists gained small honor and new words for our vocabulary when these same bags of cacti inadvertently served as pillows in our improvised camp. Nevertheless, the botanical neophytes were allowed to live, and thus we carried back with us bits of a flora that served for serious recreation and entertainment during the following months.

In the province of cactus and chaparral, no one species stands alone to figure the landscape exclusively. A single species or a solitary specimen needs the enhancing effect of mass, the presence of others grouped near it, to fill the great vacancy of the desert. By the same token, therein lies the charm of a well arranged collection that draws visitors again and again to view it. Nature has its own mode of expression, a fascinating, endless variety of combinations that vary from minute to majestic, each a gem in itself.

On the wide-flung bolson expanses, rimmed with low mountains, the irregular forms of *Opuntia imbricata* rise above their lesser brethren, their arms spread in strained gestures like crippled old men. In this treeless region, the arborescent *Opuntias* serve also a utilitarian purpose. Mockingbirds, whose delightful audacity has endeared them to all Texans, nest secure among the spiny branches, and their homes of twigs and grass silhouette themselves on many of these cylindriopuntias.

The first time we explored for cacti here, we began with these arborescent forms and worked down. Our thrill at finding *Ariocarpus fissuratus*, inconspicuous and gray, amid the rocks was probably excusable. We called the plant the Texas-star cactus because of its rugose, star-like growth, although no one since seems to have used the name. It is commonly named the Liv-

ing-rock cactus, which is less trite and equally descriptive.

Lophophora williamsii, the mescal-button or peyote was another grand find. When we finally returned home, we proudly displayed our plants, spoke at length of their abundance, and even directed others as to where to find them. Then came a shock of disappointment and chagrin. When we returned these cacti were nowhere in evidence. Gone? It seemed incredible; so we persisted and at last found a specimen of *Ariocarpus* hidden in the dust. It seemed to have receded into the very ground that nurtured it.

We had found the plants after a rain the first time, richly turgid and bright. The second time was during a drought. They were wrinkled and dull in color, and we gladly accepted the name of Living-rock thereafter. Not so with *Opuntia grabamii*, that beautiful but vicious little fellow that hugs the talus slides in silvery ridges. We discovered this one through touch when our footing gave way and we spent an hour detaching the scarious sheaths from our persons, wondering the while why a cactus must emulate a porcupine in losing its weapon and excell it by securing thereby a better one. Engelmann discovered the fact that this species can shed its spine sheath in a wound and withdraw a still perfect spine, and we confirmed it through unintentional experiment.

After that, *Echinocereus stramineus*, the pitaya, which covers whole hillsides with the silky gloss of countless spines seemed quite harmless. In good season and poor these clumps maintain themselves as impregnable spiny fortresses. When a favored spring brings rain, they burst forth in masses of lavender flowers—some say they are pink. These delicate bits of color are a promise of a tasty fruit, if you are there ahead of the birds.

When my key to Texas *Opuntias* was done, I fondly stated there were thirty-three species in the state. Now I wonder how much too small that number may be. It does not sound bad until one explores the genus again, carrying that same key with him. Engelmann, Lindheimer, Wislizenius, and the other old-timers who first explored this vegetation really had an easy time. Nothing was named when they came. All they needed was to dig deep into their Greek and Latin, describe what they found, and give it a suitable name. Some workers are still doing this, and we have many extra names for valid species.

Yet, we must not belittle their efforts. They were noble pioneers and did a good piece of work. What if *Opuntia leptocaulis*, the tase-

jillo, does bear over a dozen synonyms! There are more than that many variables to be found in nature. One of the spiny specimens we brought back with us seemed surely to fit Engelmann's *Opuntia frutescens longispina*, and we felt with enthusiasm that we had unearthed and resurrected a long lost species. Fondly we planted it in rich black soil beside a typical *Opuntia leptocaulis*, from which it differed so much even a layman could see the distinction. Then Nature played a scurvey trick upon us. The plant grew lustily, and the next year we had two perfectly good specimens of *Opuntia leptocaulis* side by side, one of which was still Engelmann's *Opuntia frutescens longispina* below and De Candolle's *Opuntia leptocaulis* above!

That is why we are more tolerant as we grow older. That is why, also, that we enjoy such *Opuntias* as *Opuntia macrocentra*, the long red-spined one with the bluish pads, and *Opuntia rufida*, the blind pear. They still look like the specimens we found afield in the desert, refusing the seductive influences of cultivation. Even *Opuntia imbricata* and its more slender companion, *Opuntia kleiniae* are subject to playing tricks. Just recently a specimen of *Opuntia imbricata* bloomed white when we were sure that yellow and pink were the accepted colors for the species.

Every botanical journey made for collecting, photography, or just for pleasure has led to some unexpected find. Although cacti have not always been our primary objective, there is something insidiously appealing about them. Once, along the Rio Grande, between Roma and Laredo, when *Wilcoxia poselgeri* started out from between the branches of a shrub, the discovery was sheer ecstasy. Many times we had hunted for this dainty little "rat-tail" and never found it; and now with never a thought for such a pretty find we located within one small area literally two score, all neatly protected by husky shrubs.

We started our collecting years ago with one of the largest of our native species and climaxed it with finding what is probably our smallest. Just a couple of years ago, while collecting seeds of another plant anomaly, a desert *Hibiscus*, we came upon our culminating thrill. Beneath a shaggy mesquite there was a growth that appeared to be a mass of seedlings of some cactus. With due curiosity on our part, we gently dug beneath the mass and discovered that they were not seedlings but mature plants, bearing fruits. We had found the little *Neomammillaria multi-ceps*, that tiny fellow most collectors have labeled *Mammillaria pusilla*. We had easily a

hundred plants in one shovel full.

We were fortunate in another way, for a hundred yards behind us the axes were ringing with the clearing of more ground for expanding citrus orchards. That is the sad part of it. Our cactus empire is shrinking. Drought has taken its toll, but man is taking the greater. Whenever land will produce under irrigation, cacti and other wild life recedes. Sometimes we are inclined just a little to wish that cacti might have a small political significance; so that they might come in for their share of financial aid.

FROM OKLAHOMA

The Cactus and Succulent Society of Oklahoma has been trying for some time to find a location for a cactus garden where they might establish marked specimens of all cacti native to Oklahoma, accessible to the public, yet fairly free from vandals.

A conference was finally arranged with Mr. French, Superintendent of The Wichita National Forest, and we were given permission to plant our Cactus Garden at the site of the Quanah Parker Dam, one of the most beautiful spots in the Wichita Forest. The garden, when planted becoming the property of the National Government.

On June 23rd, the members of the Cactus and Succulent Society made the trip to Quanah Parker Dam and made our first planting of about one hundred plants, comprising twelve varieties, which will be added to as rapidly as possible until we have specimens of all our native cacti.

MRS. JAS. H. HYDE.

THE SAN GABRIEL VALLEY CACTUS CLUB

Celebrated its anniversary on Wednesday evening, August 26, at the home of Mrs. Louisa W. Hutchison near Azusa, where the first meeting was held three years ago. After the usual pot luck supper, about 60 members and guests enjoyed a special program of entertainment provided by friends of Mrs. Hutchison. Ted Hutchison, organizer of the club, came up from San Diego for the meeting.

LONG BEACH CACTUS CLUB

At the election meeting of the local Society held in July the following officers were elected: President, George W. Becker; Vice President, Roy S. McGauhey; Secretary, Milo D. Potter.

FROM ENGLAND

Your Journals are very stimulating to me in such a well known place as Manchester with its fogs and dull days, for I have a very large collection of cacti and succulents to look after—the famous Darrah Collection which was presented to Manchester nearly thirty years ago.

H. HALL.

ILLUSTRATED GLOSSARY

With Assistant Editor Marshall's consent, we are omitting the Glossary from this issue to make room for other articles which have been with the Editor for some time. The Glossary will be continued in the October issue.

The following 8 pages are from the reprint of Britton and Rose "The Cactaceae" Vol. II. Did you answer the questionnaire in the July JOURNAL?

A STEM-ROT OF EUPHORBIA LACTEA

From the JOURNAL OF THE NEW YORK BOTANICAL GARDEN, Vol. XXXVII, No. 439

Succulent Euphorbias in greenhouses apparently are seldom affected by fungous diseases. An examination of four of our most popular publications on diseases of ornamentals has failed to disclose any mention of fungi or bacteria attacking a species of *Euphorbia*. We were therefore somewhat concerned last winter when the gardeners in charge of the succulents in Conservatory Range I reported a rather serious stem-rot of *Euphorbia lactea*, particularly of the variety *cristata*. Dark-colored or blackish, rather soft, rotted areas would appear in a branch and the disease would eventually spread until it killed that branch. It was suspected at first that the trouble was due to some bacterial infection.

While the rot was not a very wet one and it was not foul smelling, it certainly presented the appearance of a bacterial disease. Bacteria were isolated from some of the rotted spots, but it was proved by inoculation experiments that the bacteria isolated were not the primary cause of the trouble. Breaking open a rotting branch one could often see mycelial threads of a fungous growth. Pure cultures from this growth were obtained. The species has not been definitely determined but the parasite belong to the genus *Coniothyrium* which has small black fruit bodies with quantities of minute dark-colored spores. It may be *C. Euphorbiae*, which has been reported on living leaves of certain Euphorbias in



FIGURE 1. Left, a branch of *Euphorbia lactea*, on which black streaks reveal the early stages of the stem-rot caused by the fungus *Coniothyrium*. Right, a small plant of *Stapelia gigantea* showing an end-rot.

Europe a number of times. We have found no reference to a stem-rot caused by this species.

A number of inoculation of *Euphorbia lactea* var. *cristata* with the fungus isolated have resulted in the same type of rot. The fungous parasite quickly spreads through the healthy tis-



FIGURE 2. Left, characteristic stem-rot on *E. lactea* var. *cristata*. Right, a small area greatly magnified to show the spore-horns of the causal organism.

sue and later fruits abundantly on the surface. FIGURE 1 shows an end branch at an early stage of the attack. Later the whole branch rotted and one could then see hundreds of the small black spore-horns coming out of the fruit-bodies which are somewhat embedded in the host tissue. These structures are only about the size of the eye of a needle. The spore-horns, shown in FIGURE 2, are forced out through small openings in the fruit-bodies and often coil about more or less before drying out. The spore-coils persist for a long time unless they are washed off with water. The number of spores contained in one of these horns is astonishing. In case of the old chestnut-blight fungus, it was determined that each spore-horn is composed of about 1,500,000 spores. One can see from our figure that there are hundreds of these black spore-coils thickly distributed, so that the number of spores that would be scattered in a greenhouse while the diseased plants were being watered would be enormous. The fact that only an occasional plant becomes infected is proof that the fungus has much difficulty in gaining entrance through the cuticle into the host tissues. The mycelial threads are probably unable to penetrate the cuticle directly. Some wound is very likely necessary.

It is clear that the spread of the disease could largely be prevented by cutting off and destroying the rotting branches. Since the fungus is well protected once it has gained entrance into the tissue, spraying with a fungicide would be of no avail, except to prevent further spread. In case such species of *Euphorbia* should be

grown on a large scale, the disease would be a serious problem.

In Seymour's very complete host index of fungous diseases of North American plants no mention is made of a *Coniothyrium* disease on a species of *Euphorbia*. *Acalypha bisetosa*, a species of the Euphorbiaceae, is, however, reported by F. L. Stevens to harbor a species of *Coniothyrium*. Most members of this family are more susceptible to attack by species of rust and downy mildew. Fruit growers are only too familiar with the cane blight of raspberries and blackberries caused by a *Coniothyrium*. There are also two rose-stem canker diseases caused by related fungi.

Last winter we had some trouble with the common gray mold, *Botrytis*, on one "double" variety of poinsettia, *Euphorbia pulcherrima*. The blossom-ends attacked often failed to open properly, turning brown and finally rotting. It was necessary to discard a number of plants on this account. The attack was thought to have been due to faulty aeration or to the low temperature prevailing in that house. Plants of another variety in an adjacent house were not attacked. *Botrytis* on *Euphorbia pulcherrima* is not uncommon in Europe. Growers there usually control the disease by regulation of the air, moisture and light conditions. If further treatment is necessary they apply some copper spray, as it is well known that sulphur is ordinarily not very effective against *Botrytis*.

A short time after the *Euphorbia* stem-rot was noticed, several small plants of *Stapelia gigantea*

in the same house showed a similar stem rot. No isolations were made from the *Stapelia*, however, but plants were inoculated with the fungus originally obtained from the *Euphorbia*. A similar rot followed (FIGURE 1). The results of these inoculation experiments must be checked

by further work. Further work on the rots of both the *Euphorbia* and the *Stapelia* is being done to determine the specific identity of the *Coniothyrium* and also the host range of the causal organism. This report will be made at another time.
B. O. DODGE.



Perisolobus Bijleae x 1.0. Photo by John Poindexter. Exposure made at midnight. The flower is tightly closed during the day. The petals are deep yellow, tipped and backed with red.

WINTER ALSO

By DR. R. W. POINDEXTER

Last winter I derived a great deal of pleasure from *Mesembryanthemums*. Your genuine enthusiast cannot refrain from looking over one's collection each day to see what has happened during the night. While studying plants for minutes at a time, I have even been accused of hoping to detect them in the actual act of growing.

With cacti, this daily inspection is exciting in summer, but disappointing in winter, when day after day goes by with no appreciable change. During that season the exclusive cactus specialist should envy the fellow who includes *Mesems*.

in the scope of his collecting activity. For winter and early spring is the growing and flowering season for these. And how they do flower. Vivid, brilliant colors, pastel shades, combinations of color; every portion of the spectrum except blue and green is represented.

Two years ago I wrote "Some Remarks on *Mesembryanthemums*" in this JOURNAL (Vol. V, pages 533, 553, 569). The intervening time has emphasized to me their value in rounding out a collection and providing interest and occupation during the winter months. For while the safe rule is not to disturb cacti after September,

that is the beginning of the best season in which to work with Mesems., set them out or propagate them. During the summer, most of the highly succulent species should be left alone, watered sparingly or not at all, and allowed to take a well earned rest. The refusal to grant a summer vacation may be the most frequent cause of wearing out and losing choice specimens. Prime requisites are light and air, and fortunate is the collector whose situation permits him to grow Mesems. out of doors in full sunshine. That should not discourage those who are forced to use glass, but under glass they lose their fine spirit of independence and self sufficiency, and must be watched over like other hothouse subjects. The mysterious immunity toward insect attacks which Mesems. possess is another of their endearing attributes. Their chief enemies are birds, and these may be kept away by wire screen, if necessary.

The genera included under MESEMBRYANTHEMA are nearly as numerous as those under CACTACEAE, and specialization is just as fascinating. There are any number of rare plants which the collector may be proud to own if he can succeed in getting them. Many new species have become available lately, and more are arriving. Desirable genera include *Cnophytum*, *Lithops*, *Nananthus* and the related *Rabia*, *Faucaria*, *Cheiridopsis*, *Stomatium*, *Gibbeum*, *Titanopsis*, *Argyroderma*, *Pleiospilos*, *Dinteranthus*.

In conclusion a digression. The flowers of strictly night-flowering Mesems. are usually unappreciated because unseen. Why not grow specimen plants out of doors and bring them in for table adornment in the evening when they are in full flower? Several species are delightfully fragrant. There is always something romantic about night-flowering plants. Suggested for this purpose are *Machairophylum albidum*, *Perisolobus Bijleae* and any species of *Stomatium*, of which a number are available. *Mesembryanthemum* (Hereroa) *odoratum*, too, though it is not as free flowering nor as symmetrical as the others mentioned. It must be borne in mind that all of these should be grown in full sun in order to bloom well.

BOOK-REVIEW

ZUR KENNNTNIS DER GATTUNG ECHEVERIA. By Karl von Poellnitz; in Fedde, Repertorium, 39:193-270; 1936, Dahlem, Berlin.

Those of our readers who have been interested in the genus *Echeveria* and have been waiting, with growing impatience, for the monograph promised by Mr. Walther, will hear with interest of the recent publication of the contribution

here reviewed. The text is wholly in German and Latin, neither photographs nor drawings are appended; the Key is the infrequently used, bracketed type. Of the 77 pages of text, the first two are devoted to a discussion of the generic delimitation, Herr von Poellnitz following entirely the lead of Mr. Walther in including *Oliveranthus*, *Urbina* and *Courantia* with *Echeveria*, but keeping separate *Dudleya*, *Stylophyllum*, *Pachyphytum*, *Graptopetalum* and *Thompsonella*. A total of 90 species are admitted as valid; of the new species, as well as several new combinations published here and in previous issues of the same Periodical, the following may be mentioned:

- Echeveria backebergii* v.P.: near *E. chilensis* (Ball) Berg.
- E. neglecta* v.P.: near *E. chilensis* (Ball) Berg.
- E. tepeacensis* v.P.: near *E. paniculata* A. Gray.
- E. sessiliflora* var. *pinetorum* (Rose) v.P., new combination.
- E. discolor* L.de Smet: is *E. nodulosa* (Baker) Otto.
- E. nuda* var. *montana* (Rose) v.P., new combination (?)
- E. chiapensis* Rose & von Poellnitz: *E. goldmani* Rose (?)
- E. quitensis* var. *sprucei* (Baker) v. Poellnitz, new combination (?)
- E. whitei* & *chilonense*; here von Poellnitz quotes Mr. Walther as having stated that "anyone capable of placing this in the genus *Sedum* might well have been colorblind too," in reference to the sole difference between the species mentioned, the latter supposedly having yellow flowers.
- E. buchtienii* von Poellnitz; *E. peruviana* Meyen.
- E. venezuelensis* Rose, is mentioned as valid by von Poellnitz, whereas *E. bracteolata* is reduced to *E. bicolor* (HBK) E. Walth.
- E. elegans* var. *simulans* (Rose) von Poellnitz; new combination.
- E. simulans* appears fully as distinct as *E. cuspidata*, for instance, we wonder did Herr von Poellnitz see living plants?
- E. elegans* var. *kesselringiana* von Poellnitz, new variety.
- E. peacockii* Croucher includes as synonyms *E. tenuis* and *subsessilis* Rose.
- E. schaffneri* (S. Watson) E. Walth.; the combination is attributed to Mr. Walther, probably because of Dr. Rose's confusing this species with *E. paniculata* A. Gray.
- E. obtusifolia* var. *scopulorum* (Rose) von Poelln. new combination.
- E. secunda* var. *byrnesii* (Rose) von Poelln. new combination.
- E. glauca* var. *pumila* (Schlecht.) von Poelln. new combination.
- E. glauca* var. *tolucensis* (Rose) von Foelln., new combination.
- E. angusta* von Poellnitz, new species; described from cultivated plants grown from seed obtained in Mexico by Mrs. Winter. Seedlings from the same source which have flowered locally do not differ in any essentials from *E. subrigida*, as collected at the type-locality by Mr. Walther.
- E. chihuahuensis* von Poelln.; near *E. agavoides* Lem.
- E. minutifolia* von Poelln.; this should be com-

pared with *Graptopetalum pachyphyllum* Rose from the identical locality.

E. gloriosa Rose; according to the very latest information received from Mr. Walther this may be undistinguishable from *E. rubromarginata* Rose.

E. agavoides var. *corderoyi* (Morren) von Poeln, new combination.

E. brachyantha Sprague; is apparently a hybrid.

A lengthy list is given of synonyms, species transferred to other genera, insufficiently known or otherwise invalid species-names. There follows an enumeration of named and unnamed hybrids, by no means including all of our California sports. A short supplement does justice to the more recent publication of Mr. Walther

in the CACTUS JOURNAL.

Anyone capable of reading German will find this publication well worth of some study, and will find therein much food for thought and an incentive for further investigation. It is apparent that much hard work went into the preparation of this paper; and any errors that may have crept in are such as inevitably follow from the attempted study of Succulents from dried herbarium-specimens. It will require an expert on the genus to pass final judgment on the work here reviewed.

SCOTT E. HASELTON.

WHAT GROWS WHERE

Cacti Listed in Accordance With Their Geographical Origin

Compiled by Anne Smith, Santa Barbara, Calif.

T E X A S

SUBTRIBE HYLOCEREANAE

SELENICEREUS

S. spinulosus

Type Locality: Mexico.

Distribution: Eastern Mexico to southeastern Texas.

SUBTRIBE ECHINOCEREANAE

ECHINOCEREUS

E. triglochidiatus

Type Locality: Wolf Creek, New Mexico.

Distribution: Western Texas, New Mexico, and Colorado.

E. octacanthus

Type Locality: Northern Texas.

Distribution: Known to us definitely only from northwestern Texas, but reported by Coulter from New Mexico and Utah.

E. conoideus

Type Locality: On the Upper Pecos, New Mexico.

Distribution: Southeastern New Mexico and western Texas.

E. davisii M. d. K. 1932, p. 90

Type Locality: Not cited.

Distribution: 4 miles south of Marathon, Brewster County, Texas, 1400 meters elevation. Only found during blossom time, plant is hidden in moss.

E. chloranthus

Type Locality: About El Paso, Texas.

Distribution: Western Texas, southeastern New Mexico, and northern Mexico.

E. viridiflorus

Type Locality: Prairies about Wolf Creek, New Mexico.

Distribution: Southern Wyoming to eastern New Mexico, western Kansas, western Texas, and South Dakota.

E. dasycanthus

Type Locality: El Paso, Texas.

Distribution: Western Texas, southern New Mexico, and northern Chihuahua. It has been reported from Arizona, but doubtless wrongly.

E. ctenoides

Type Locality: Eagle Pass, Texas.

Distribution: Southern Texas and Chihuahua.

E. papillosus

Type Locality: Not cited.

Distribution: Western Texas.

E. blanchii

Type Locality: Near Camargo, state of Tamaulipas, Mexico.

Distribution: Northeastern Mexico and southern Texas.

E. pentaloophus

Type Locality: Mexico.

Distribution: Eastern Mexico and southern Texas.

- E. perbellus*
 Type Locality: Not cited.
 Distribution: Collected at Big Springs, Texas.
- E. reichenbachii*
 Type Locality: Mexico.
 Distribution: Texas and northern Mexico; recorded from western Kansas.
- E. fitcbii*
 Type Locality: Not cited.
 Distribution: Near Laredo, Texas.
- E. roetteri*
 Type Locality: Near El Paso, Texas.
 Distribution: Southwestern Texas; Chihuahua, near El Paso, and southeastern New Mexico.
- E. fendleri*
 Type Locality: Near Santa Fe, New Mexico.
 Distribution: Texas to Utah, Arizona, and northern Sonora and Chihuahua, Mexico.
- E. enneacanthus*
 Type Locality: Near San Pablo, south of Chihuahua, Mexico.
 Distribution: Northern Mexico, New Mexico, and southern Texas.
- E. lloydii*
 Type Locality: Not cited.
 Distribution: Collected near Tuna Springs, Texas.
- E. dubius*
 Type Locality: Sandy bottoms of the Rio Grande at El Paso.
 Distribution: Southeastern Texas, perhaps confined to the El Paso region.
- E. stramineus*
 Type Locality: Mountain slopes, El Paso, Texas.
 Distribution: Western Texas, southern New Mexico, and northern Chihuahua.

SUBTRIBE ECHINOCACTANAE

ARIOCARPUS

- A. fissuratus*
 Type Locality: Near the junction of the Pecos with the Rio Grande.
 Distribution: Western Texas and northern Coahuila and Zacatecas, Mexico.

LOPHOPHORA

- L. williamsii*
 Type Locality: Not cited.
 Distribution: Central Mexico to southern Texas.

EPITHELANTHA

- E. micromeris*
 Type Locality: Western Texas.
 Distribution: Western Texas and northern Mexico.

HAMATOCACTUS

- H. setispinus*
 Type Locality: Thickets along the Colorado River, Texas.
 Distribution: Southern Texas and northern Mexico.

FEROCACTUS

- F. wislizeni*
 Type Locality: Donana, New Mexico.
 Distribution: El Paso, Texas, west through southern New Mexico and Chihuahua to Arizona and Sonora and perhaps south along the Gulf of California into Sinaloa. Reported also from Utah, perhaps erroneously, and from Lower California.
- F. hamatacanthus*
 Type Locality: Mexico.
 Distribution: Southern Texas, New Mexico, and northern Mexico.
- F. uncinatus*
 Type Locality: Mexico.
 Distribution: Rocky ridges and foothill-slopes in western Texas to central Mexico.

ECHINOMASTUS

- E. intertextus*
 Type Locality: Not definitely cited.
 Distribution: Southwestern Texas, to southeastern Arizona and northern Mexico.
- E. dasyacanthus*
 Type Locality: Near El Paso, Texas.
 Distribution: Southwestern Texas.

HOMALOCEPHALA

H. texensis

- Type Locality: Texas; type grown in a botanical garden from seed.
 Distribution: Southeastern New Mexico, Texas, and northern Mexico.

SUBTRIBE CORYPHANTHAE

ANCISTROCACTUS

A. scheeri

- Type Locality: Not cited.
 Distribution: Southern Texas and northern Mexico.

A. brevihatatus

- Type Locality: On the San Pedros, Texas.
 Distribution: Southern Texas.

THELOCACTUS

T. bicolor

- Type Locality: Mexico.
 Distribution: Southern Texas to central Mexico.

NEOLLOYDIA

N. texensis

- Type Locality: Not cited.
 Distribution: Collected at Sanderson, Texas.
 Distribution: Southern New Mexico, western Texas, and Chihuahua, south to Zacatecas, Mexico.

CORYPHANTHA

C. macromeris

- Type Locality: Near Donana, New Mexico.

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